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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,135	11/01/2005	Katsuhiro Takushima	125509	4295

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EXAMINER

RIGGLEMAN, JASON PAUL

ART UNIT	PAPER NUMBER
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1746

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/551,135

Applicant(s)

TAKUSHIMA, KATSUHIRO

Examiner

Jason P. Riggelman

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/13/2006 and 1/9/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's replies filed on 12/13/2006 (amendment) and 1/9/2007 (supplemental amendment) are acknowledged. Current pending claims are 33-71 (new). Claims 1-32 have been canceled. Claims 2, 6-10, 13-14, 17, and 27 have been amended. The supplemental amendment filed on 1/9/2007 amended claims 68 and 70-71.
2. Applicant's arguments and amendments, filed 1/16/2007, have been fully considered and not persuasive with regards to the 102 (b) rejection of claims 1-7, 11-19, and 23-32 over Harano et al. (US Patent Application Publication No. 2001/0037818). In the previous action, claims 1-32 were rejected under 112 second paragraph; however, these claims are canceled and the rejections are therefore withdrawn. The applicant argues that "Harano is not suited for many applications that involved cleaning an object having a pattern structure on a surface because the ice crystals: would seriously damage some substrates having a fine pattern, such as a photomask. Further stating that "Harano is obviously practically useless insofar as it places no importance on potential damage to the substrate". The 102 (b) rejection of claims 1-7, 11-19, and 23-32 over Harano et al. was made because these claims do not claim a patterned substrate; therefore, the examiner assumes the applicant is arguing only to the claims containing a patterned substrate – namely the claims 8-10 and 20-22 rejected under 103 (a) Harano et al. (US Patent Application Publication No. 2001/0037818) over JP 020099175.

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3. Harano teaches a sherbert-like composition containing snow ice grains and liquid chemical agent. JP 020099175 teaches a high viscosity liquid used to clean patterned substrates. The examiner agrees that it would not be obvious to combine these two references due to a lack of proper motivation. The 103 (a) rejection of claims 8-10 and 20-22 is therefore withdrawn.

4. The examiner asserts; however, that it would be obvious to use Harano et al. to clean semiconducting substrates – finely patterned or photomasks. Harano et al. allows for modification of the snow grains to enable efficient cleaning of substrates – the ice grains are substantially smaller than any depressions (patterns) in the substrate, (paragraphs [0005] and [0008]) – preventing damage to the substrate. The burden is on the applicant to prove that Harano et al. would indeed damage a photomask; therefore, could not be used to clean a patterned photomask.

Specification

5. The specification states that the “zeta-potential of the glass is pH 6 higher” on pg. 16. The applicant is reminded that zeta-potential is measured in units of voltage and not pH.

Claim Objections

6. Claim 66 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "odd shaped" is an objective description. For purposes of examination the member is assumed to be – nonplanar.

9. Claims 33, 35, 45, 53-54, 60, 62-64 and 59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In regards to claim 33, the term "essentially" is vague – for purposes of examination this is assumed to be – in part. In regards to claim 35, "and the object" appears to be a typographical error. In regards to claims 54, 62, and 63, the language "a member different from the object" is confusing". In regards to claims 45 and 59, the term "undercut" is vague. For purposes of examination, this is assumed to be – nonplanar. In regards to claims 53 and 60, the phrase "maintaining the contact" is not understood. In regards to claim 64, a planar "concavo-convex" surface is not understood. For purposes of examination, this is assumed to be – planar.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claim 70 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows: the disclosure does not specifically state that the cleaning agent contains substantially no solid substance is not discussed.

12. Claim 66 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A means for changing liquid viscosity is not enabled by the disclosure – see pg. 10, fourth paragraph, and pg. 26, second paragraph, of the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 33-37, 41, 46, 49-57, 59-64, and 66-67 are rejected under 35 U.S.C. 102(b) as being unpatentable by Harano et al. (US Patent Application Publication No. 2001/0037818).

14. Harano et al. teaches a particle removing method for removing a particle adhered on the surface of semiconducting substrate in which a cleaning agent is made to contact a surface of the substrate. The cleaning agent is a viscous liquid – sherbert-like

(inherently suggesting a viscosity greater than 50mPa•s which is approximately that of castor oil). Alkaline chemicals are provided which control the zeta-potential of the particles causing them to be electrochemically repelled from the substrate (and homopolar), paragraph [0063]. This method allows for modification of the snow grains to enable efficient cleaning of substrates – the ice grains are substantially smaller than any depressions (patterns) in the substrate, paragraphs [0005] and [0008]. The gravity fed liquid is made to move and thus generates a force (shearing force) which removes the particle. The liquid has a viscosity such that the force generated by the movement of the liquid is larger than the adhesion force between the particle and the substrate. Also, the movement of the liquid may be performed by an object not contacting the substrate thereby removing the particle with the force. Urging means (circular rotatable plate 84) are present for urging the sherbert against the substrate thereby cleaning by entrapping the particles. There is a liquid supplier (supply line 13) for supplying a liquid by making the liquid contact a surface of the object. There is an externally supplied force applied to the liquid. The substrate can be rotated and reciprocated, paragraph [0023], and the system cleaned with water.

15. Claims 33-40, 46-49, 50-52, 54-57, 60-62, and 65-68 and 70-71 are rejected under 35 U.S.C. 102(b) as being unpatentable by Gross et al. (US Patent No. 4891150).

16. Gross et al. teaches a cleaning method for cleaning an object (toilet bowl) having a "patterned structure" (made of structured atoms -- inherent) on a surface comprising making a cleaning agent (toilet cleanser) contact a surface of the object (toilet bowl) where the cleaning agent (toilet cleanser) is in a liquid state and consists "essentially" of

a liquid having a viscosity of 200 to 300 mPa•s (100 – 250 mPa)(Column 3, Lines 20-34). Note: the Gross et al. describes the viscosities of the toilet cleanser in units of mPa (pressure); however, this is obviously a typographical error and one skill in the art would recognize this fact. Also, it is to be assumed that such a viscosity measurement would be at 20°C (standard temperature and pressure), unless otherwise noted. A force is applied to the surface (toilet bowl) by movement of liquid (toilet cleanser) on the surface (toilet bowl) – by flushing of the toilet bowl with water (Column 3, Lines 7-17). The force is generated by the movement of the liquid (toilet cleanser) caused by relative movement of a member (toilet flushing means) in contact with the liquid but not in contact with the object (toilet bowl)(non-contact state). The member (toilet bowl) has an “odd-shaped” surface. The force is an externally applied force (user engages toilet flushing means). The liquid is moved on the surface by declination of the object (gravity flowing due to shape of bowl – to drain). The liquid is moved on the surface by supplying another liquid (water) having lower viscosity than the liquid (toilet cleanser). The liquid comprises a water soluble compound consisting of ethylene oxide additives and propylene oxide additives of polyatomic alcohol and nonionic surfactant. (Column 4, Lines 3-37).

17. Claims 33, 42-43, and 68-69 are rejected under 35 U.S.C. 102(b) as being unpatentable by Ishikawa et al. (US Patent Application Publication No. US2003/0195129).

18. Ishikawa et al. teaches a method for cleaning an object (clothes) having a patterned structure (fabrics have patterns inherently) where the liquid cleaning agent

contacts a surface of the object (clothes) and has a viscosity of at least 50 mPa•s at 20°C and a force is applied to the surface (agitating means of washing machine), paragraphs [0005] and [0008]. The pH of the cleaning agent is in the 9-11 range, paragraph [0007].

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 44-45 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harano et al. (US Patent Application Publication No. 2001/0037818), as applied to claims 33, 54, and 56 above.

21. Harano et al. does not teach cleaning a patterned photomask (with “undercut shape”); however, Harano et al. allows for modification of the snow grains to enable efficient cleaning of substrates – the ice grains are substantially smaller than any depressions (patterns) in the substrate, (paragraphs [0005] and [0008]) – preventing damage to the substrate. Since Harano et al. teaches a method for cleaning for cleaning a semiconductor wafer; a substrate for a liquid crystal display; a glass panel for use in manufacture of a plasma display panel or the like then cleaning a photomask (which are typically patterned) is suggested to one of ordinary skill in the art; therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to

modify Harano et al. to create a photomask cleaning method which allows for effective removal of adhered particles by manipulating the zeta-potential of the particles.

Conclusion

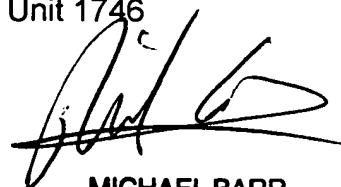
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason P. Riggleman whose telephone number is 571-272-5935. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPR

Jason P Riggleman
Examiner
Art Unit 1746

A handwritten signature in black ink, appearing to read 'Michael Barr', is written over a horizontal line.

MICHAEL BARR
SUPERVISORY PATENT EXAMINER